



PHYSICS

BOOKS - MTG PHYSICS (ENGLISH)

PHYSICAL WORLD

Exercise

1. Physics involves the study of

A. plants

B. humans

C. birds and animals

D. nature and natural phenomena

Answer: D



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2. Which of the following statements is not correct

A. Physics is the study of nature and natural phenomena.

B. Physics and technology are not related to each other

C. Electrodynamics deals with electric and magnetic phenomena associated with charged and magnetic bodies.

D. The physical quantities that remain unchanged in a process are called conserved quantities

Answer: B



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3. Which of the following is not a branch of physics?

A. Mechanics

B. Optics

C. Cytogenetics

D. Electrodynamics

Answer: C



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4. The range of masses we study in Physics is

A. 10^{-27} kg to 10^{60} kg

B. 10^{-27} kg to 10^{55} kg

C. 10^{-30} kg to 10^{55} kg

D. 10^{-30} kg to 10^{60} kg

Answer: C



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5. CLASSICAL PHYSICS

A. microscopic world

B. macroscopic world

C. both microscopic and macroscopic world

D. cannot say

Answer: B



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6. CLASSICAL PHYSICS

A. Mechanics

B. light

C. heat

D. elementary particles

Answer: D



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7. Which of the following statements is correct ?

A. Newton belonged to U.K., who discovered law of gravitation.

B. Einstein belonged to England, who discovered laws of photoelectric effect.

C. John Bardeen belonged to France, who discovered transistors

D. W.K. Roentgen belonged to Holland, who discovered X-rays.

Answer: A



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8. Which of the following statements is correct?

A. Aeroplane is based on Newton's laws of motion and steam engine on Bernoulli's theorem.

B. Hydroelectric power is based on law of thermodynamics and rocket propulsion on Bernoulli's theorem.

C. Computers are based on digital logic of electronic circuits, while electric generator on Faraday's laws of electromagnetic induction.

D. Nuclear reactor is based on law of thermodynamics and sonar on optical interference.

Answer: C



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9. Who first gave the concept of antiparticle ?

A. Niels Bohr

B. Ernest Rutherford

C. Albert Einstein

D. Paul Dirac

Answer: D



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10. Sir C.V. Raman was awarded Nobel Prize for his work connected with which of the following phenomenon of radiation

- A. refraction of light
- B. reflection of light
- C. scattering of light
- D. dispersion of light

Answer: C



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11. Which of the following does not depict the correct link between technology and physics ?

A. Photocell - Photoelectric effect

B. Rocket propulsion - Laws of thermodynamics

C. Optical fibres - Total internal reflection of light

D. Fusion test reactor - Magnetic
confinement of plasma

Answer: B



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**12. Which year was declared as International
Year of Physics ?**

A. 2002

B. 2003

C. 2005

D. 2007

Answer: C



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13. Generation, propagation and detection of electromagnetic waves is the basis of

A. lasers

B. reactors

C. radio and television

D. computer

Answer: C



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14. Lightning was discovered by option 1 ohm
option 2 Thomson Option 3 Franklin Option 4
Faraday

A. Ohm

B. Thomson

C. Franklin

D. Faraday

Answer: C



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15. What is full form of GMRT ? 1. Ground Mobile receive Thermal 2. Geometric Mean Reciprocal Titer 3. Giant Meterwave Radio

Telescope 4. General maintenance and Repair Technician

A. Ground Mobile Receive Thermal

B. Geometric Mean Reciprocal Titer

C. Giant Metrewave Radio Telescope

D. General Maintenance and Repair
Technician

Answer: C



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16. Electron microscope is used for

Option 1

spin

Option 2

wave nature

Option 3

negative charge

Option 4

none of these

A.

spin

B. wave nature

C. negative charge

D. none of these

Answer: B



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17. Which of the following statements is incorrect? Bohr gave theory of hydrogen atom and, Yukawa gave theory of nuclear forces. Law of gravitation was discovered by Newton and

principle of inertia by Galileo. Laws of photoelectric effect were discovered by Einstein and laws of electromagnetic induction by Faraday. Neutron was discovered by J.J. Thomson and electron was discovered by James Chadwick.

A. Bohr gave theory of hydrogen atom and,

Yukawa gave theory of nuclear forces.

B. Law of gravitation was discovered by

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C. Laws of photoelectric effect were discovered by Einstein and laws of electromagnetic induction by Faraday.

D. Neutron was discovered by J.J. Thomson and electron was discovered by James Chadwick.

Answer: D



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18. 'SONAR' emits which of the following waves

Radio waves Micro waves Ultrasonic waves

Gamma rays

A. Radio waves

B. Micro waves

C. Ultrasonic waves

D. Gamma rays

Answer: C



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19. Who invented the cyclotron ? 1.James Chadwick 2.James Clerk Maxwell 3.Michael Faraday 4.Ernest Orlando Lawrence

A. James Chadwick

B. James Clerk Maxwell

C. Michael Faraday

D. Ernest Orlando Lawrence

Answer: D



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20. In which year did Hahn and Meitner discover the phenomenon of neutron-induced fission of uranium ?

Option

1938

Option 2

1950

Option 3

1945

Option 4

1928

A. 1938

B. 1950

C. 1945

D. 1928

Answer: A



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21. Which of the following forces is not fundamental force in nature 1. Gravitational

force 2. Electromagnetic force 3. Strong nuclear force 4. Tension?

- A. Gravitational force
- B. Electromagnetic force
- C. Strong nuclear force
- D. Tension

Answer: D



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22. Arrange the following basic forces in the increasing order of relative strength

1. Gravitational force 2. Electromagnetic force

3. Weak nuclear force 4. Strong nuclear force

Option 1

1,2,3,4

Option 2

1,3,2,4

Option 3

4,3,2,1

Option 4

4,1,2,3

A. 1,2,3,4

B. 1,3,2,4

C. 4,3,2,1

D. 4,1,2,3

Answer: B



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23. What is the range of the gravitational force?

A. $10^{-2}m$

B. $10^{-15}m$

C. Infinite

D. $10^{-10}m$

Answer: C



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24. Force of friction and tension in a string are

A. Gravitational forces

B. Electromagnetic forces

C. Nuclear forces

D. Weak forces

Answer: B



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25. Pick out the correct statements about the strong nuclear force from the following.

S1: It is charge independent.

S2: It is the strongest force in nature.

S3: Its range is very large.

S4: It is responsible for the stability of nuclei.

A. S1 and S3

B. S1, S2 and S3

C. S1, S2 and S4

D. S2 and S3

Answer: C



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26. Inverse square law of distance is followed by

A. Gravitational forces

B. Electromagnetic forces

C. Both (a) and (b)

D. Neither (a) and nor (b)

Answer: C



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27. Which of the following relations is correct?

A. $E=mc$

B. $E = mc^2$

C. $E = 2mc^2$

D. $E = mc^2 / 4$

Answer: B



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28. Which of the following statements is not correct regarding conservation laws?

A. A conservation law is a hypothesis based on observations and experiments

B. Conservation laws do not have a deep connection with symmetries of nature.

C. A conservation law cannot be proved.

D. Conservation of energy, linear momentum, angular momentum are

considered to be fundamental laws of physics.

Answer: B



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29. Which of the following physical quantities is not conserved?

A. Energy

B. Linear momentum

C. Force

D. Mass

Answer: C



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30. The acceleration due to gravity on the moon is

A. $\left(\frac{1}{6}\right)^{th}$ that of the earth

B. same that of the earth

C. $\left(\frac{1}{3}\right)^{rd}$ that of the earth

D. $\left(\frac{1}{5}\right)^{th}$ that of the earth

Answer: A



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Assertion Reason

1. Assertion : In physics, we attempt to derive the properties of a bigger, more complex system from the properties and interaction of

its constituent simpler parts.

Reason : This approach is called unification and is at the heart of physics.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C



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2. CLASSICAL PHYSICS

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C



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3. Assertion : The elastic spring force arises due to the net attraction or repulsion between the neighbouring atoms of the spring when it is elongated or compressed.

Reason : The laws of derived forces such as spring force, friction force are independent of the laws of fundamental forces in nature.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C



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4. Assertion : Electrostatic forces are attractive as well as repulsive in nature.

Reason : Charges are positive and negative in nature.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C



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5. Assertion : Electrons do not experience strong nuclear force.

Reason : Strong nuclear force is charge-independent force.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B



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6. Assertion : The basic laws of electromagnetism govern all electric and magnetic phenomena.

Reason : The attempts to unify fundamental forces of nature reflect the quest for unification.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B



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7. Assertion : If we perform an experiment in our laboratory today and repeat the same experiment on the same objects under identical conditions after a year, the results are found to be the same .

Reason : The laws of nature do not change with time.

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Answer: A



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8. Assertion : In a nuclear process mass gets converted into energy.

Reason : According to Einstein's mass energy equivalence relation, mass m is equivalent to energy E , given by the relation $E = mc^2$ where c is the speed of light in vacuum.

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C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B



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9. Assertion: The acceleration due to gravity on the moon is one-sixth that on the earth.

Reason : The law of gravitation is the same on both the moon and the earth. .

Option1 If both assertion and reason are true and reason is the correct explanation of assertion

Option2 If both assertion and reason are true but reason is not the correct explanation of assertion.

Option3 If assertion is true but reason is false.

Option4 If both assertion and reason are false.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B



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10. Assertion : A stone and a feather dropped from the same height do not reach the ground at the same time.

Reason : Acceleration due to gravity is dependent on the mass of the object.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

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C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C



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Scope And Excitement Of Physics

1. The range of masses we study in Physics is

A. 10^{-27} kg to 10^{60} kg

B. 10^{-27} kg to 10^{55} kg

C. 10^{-30} kg to 10^{55} kg

D. 10^{-30} kg to 10^{60} kg

Answer: C



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2. CLASSICAL PHYSICS

A. microscopic world

B. macroscopic world

C. both microscopic and macroscopic world

D. cannot say

Answer: B



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3. CLASSICAL PHYSICS

A. Mechanics

B. light

C. heat

D. elementary particles

Answer: D



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4. Which of the following statements is correct

?

A. Newton belonged to U.K., who discovered law of gravitation.

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C. John Bardeen belonged to France, who discovered transistors

D. W.K. Roentgen belonged to Holland, who discovered X-rays.

Answer: A



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B. Hydroelectric power is based on law of thermodynamics and rocket propulsion on Bernoulli's theorem.

C. Computers are based on digital logic of electronic circuits, while electric generator on Faraday's laws of electromagnetic induction.

D. Nuclear reactor is based on law of thermodynamics and sonar on optical interference.

Answer: C



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6. Who first gave the concept of antiparticle ?

A. Niels Bohr

B. Ernest Rutherford

C. Albert Einstein

D. Paul Dirac

Answer: D



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7. Sir C.V. Raman was awarded Nobel Prize for his work connected with which of the following phenomenon of radiation

A. refraction of light

B. reflection of light

C. scattering of light

D. dispersion of light

Answer: C



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8. Which of the following does not depict the correct link between technology and physics ?

A. Photocell - Photoelectric effect

B. Rocket propulsion - Laws of thermodynamics

C. Optical fibres - Total internal reflection of light

D. Fusion test reactor - Magnetic confinement of plasma

Answer: B



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9. Which year was declared as International Year of Physics ?

A. 2002

B. 2003

C. 2005

D. 2007

Answer: C



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10. Generation, propagation and detection of electromagnetic waves is the basis of

A. lasers

B. reactors

C. radio and television

D. computer

Answer: C



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11. Lightning was discovered by option 1 ohm
option 2 Thomson Option 3 Franklin Option 4
Faraday

A. Ohm

B. Thomson

C. Franklin

D. Faraday

Answer: C



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12. What is full form of GMRT ? 1. Ground Mobile receive Thermal 2. Geometric Mean Reciprocal Titer 3. Giant Meterwave Radio Telescope 4. General maintenance and Repair Technician

A. Ground Mobile Receive Thermal

B. Geometric Mean Reciprocal Titer

C. Giant Metrewave Radio Telescope

D. General Maintenance and Repair

Technician

Answer: C



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13. Electron microscope is used for

Option 1

spin

Option 2

wave nature

Option 3

negative charge

Option 4

none of these

A. spin

B. wave nature

C. negative charge

D. none of these

Answer: B



14. Which of the following statements is incorrect? Bohr gave theory of hydrogen atom and, Yukawa gave theory of nuclear forces. Law of gravitation was discovered by Newton and principle of inertia by Galileo. Laws of photoelectric effect were discovered by Einstein and laws of electromagnetic induction by Faraday. Neutron was discovered by J.J. Thomson and electron was discovered by James Chadwick.

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C. Laws of photoelectric effect were

discovered by Einstein and laws of

electromagnetic induction by Faraday.

D. Neutron was discovered by J.J. Thomson

and electron was discovered by James

Chadwick.

Answer: D



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15. 'SONAR' emits which of the following waves

Radio waves Micro waves Ultrasonic waves

Gamma rays

A. Radio waves

B. Micro waves

C. Ultrasonic waves

D. Gamma rays

Answer: C



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16. Who invented the cyclotron ? 1.James Chadwick 2.James Clerk Maxwell 3.Michael Faraday 4.Ernest Orlando Lawrence

A. James Chadwick

B. James Clerk Maxwell

C. Michael Faraday

D. Ernest Orlando Lawrence

Answer: D



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17. In which year did Hahn and Mietner discover the phenomenon of neutron-induced fission of uranium ?

Option

1938

Option 2

1950

Option 3

1945

Option 4

1928

A. 1938

B. 1950

C. 1945

D. 1928

Answer: A



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Fundamental Force In Nature

1. Which of the following forces is not fundamental force in nature

1. Gravitational force
2. Electromagnetic force
3. Strong nuclear force
4. Tension?

A. Gravitational force

B. Electromagnetic force

C. Strong nuclear force

D. Tension

Answer: D



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2. Arrange the following basic forces in the increasing order of relative strength

1. Gravitational force 2. Electromagnetic force

3. Weak nuclear force 4. Strong nuclear force

Option 1

1,2,3,4

Option 2

1,3,2,4

Option 3

4,3,2,1

Option 4

4,1,2,3

A. 1,2,3,4

B. 1,3,2,4

C. 4,3,2,1

D. 4,1,2,3

Answer: B



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3. What is the range of the gravitational force?

A. $10^{-2}m$

B. $10^{-15}m$

C. Infinite

D. $10^{-10}m$

Answer: C



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4. Force of friction and tension in a string are

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B. Electromagnetic forces

C. Nuclear forces

D. Weal forces

Answer: B



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5. Pick out the correct statements about the strong nuclear force from the following.

S1: It is charge independent.

S2: It is the strongest force in nature.

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A. S1 and S3

B. S1, S2 and S3

C. S1, S2 and S4

D. S2 and S3

Answer: C



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6. Inverse square law of distance is followed by

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C. Both (a) and (b)

D. Neither (a) and nor (b)

Answer: C



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Nature Of Physical Laws

1. Which of the following relations is correct?

A. $E=mc$

B. $E = mc^2$

C. $E = 2mc^2$

$$D. E = mc^2 / 4$$

Answer: B



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2. Which of the following statements is not correct regarding conservation laws?

A. A conservation law is a hypothesis based on observations and experiments

B. Conservation laws do not have a deep connection with symmetries of nature.

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D. Conservation of energy, linear momentum, angular momentum are considered to be fundamental laws of physics.

Answer: B



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Assertion And Reason

1. Assertion : In physics, we attempt to derive the properties of a bigger, more complex system from the properties and interaction of its constituent simpler parts.

Reason : This approach is called unification and is at the heart of physics.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

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Answer: C



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